Quantitative Aptitude

Solved paper of Bank P.O., Indian Overseas Bank held on January 18, 2004

1. A shopkeeper offered a discount of 15% on the labelled price. By selling an article for Rs 340 after giving discount he earned a profit of $13\frac{1}{2}\%$. What would have been the per cent

profit earned if no discount was offered?

(a) $28\frac{1}{2}$ (b) $30\frac{1}{3}$ (c) 27 (d) $33\frac{1}{2}$ (e) None of these

2. From 3 men and 4 women, three persons are to be selected in such a way that at least one woman is selected. In how many different ways can they be selected?

- (a) 60 (c) 21 (b) 42
- (d) 36 (e) None of these

3. The square of a positive integer is more than its five times by 14. What is the positive integer?

- (a) 4 (b) 2
- (c) 7 (d) Cannot be determined

(e) None of these

4. A boat covers a distance of 30 kms in $2\frac{1}{2}$ hours running

down streams. While returning, it covers the same distance in

 $3\frac{3}{4}$ hours. What is the speed of the boat in kmph?

(a) 12 (c) 14 (b) 8 (d) 15 (e) None of these

5. In how many different ways can the letters of the word DISTANCE be arranged so that all the vowels come together? (a) 720 (c) 4032

- (b) 4320 (d) 1440 (e) None of these
- Qs. 6-8. These questions are based on the following

information:

In a class of 50 students, 26% students play only cricket, 18% students play only badminton, 10% students play only football, 20% students play only badminton and cricket, 12% students play only cricket and football and 8% students play only football and badminton, 6% students play all three games.

6. Total how many students play cricket?

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(<i>a</i>) 26	(b) 19	(c) 23
(d) 32	(e) None of these	
7. Total how r	many students play football?	
(a) 15	<i>(b)</i> 18	(c) 12
(<i>d</i>) 13	(e) None of these	
8. How many	students play both the games	badminton and
football?		
(a) 7	<i>(b)</i> 4	(c) 3
(<i>d</i>) 13	(e) None of these	
9. What appro	ximate value will come in place	e of the question
mark (?) in the follo	wing equation?	_

- $7.05 \times 29.99 + ? = 300.59$
- (a) 110 (b) 95 (c) 90 (*d*) 98 (e) 112

10. Four of the following five parts numbered (*a*), (*b*), (*c*), (*d*) and (e) are exactly equal. The number of the part which is not equal to the other four parts is your answer.

28% of 450 + 4 = 2.5 × 36 + .8 × 50 = $\frac{2}{3}$ of 195 = .8 × 160 + 2 (b) (c) (*d*) = 86% of 150 + 3 (e)

Qs. 11-15. In each of the following number series only one number is wrong. Find out that wrong number.

11. 4	6	14	51	220	1125 6786		
(a) 51					(b) 14	(C)	6
(d) 112	25				(e) 220		
12. 5	12	7	10	3 8	2		
(a) 12					(<i>b</i>) 7	(c)	10
(d) 3					(e) 8	. ,	
13. 4	7	16	46	124	367 1096		
(a) 367	7				(<i>b</i>) 7	(C)	16
(<i>d</i>) 46					(e) 124		
14. 19	28	3 3	9 5	1 67	84 103		
(a) 19					(b) 28	(C)	39
(<i>d</i>) 51					(e) 67		
15. 4	2	3	7.5	26.25	118.725 649.6875		
(a) 118	8.725	5			(b) 26.25	(C)	7.5
(<i>d</i>) 3					(e) 2		

Qs. 16-20. These questions are based on the following table:

Number of items (in lakhs) produced by six Companies over the years

Year Company	1997	1998	1999	2000	2001
Р	38.5	53.4	48.6	76.4	56.5
Q	106	68.6	62.7	98.9	72.8
R	65.4	72.8	63.5	82.5	86.4
S	48.5	96.5	78.6	91.5	92.8
Т	52.6	99.8	82.2	102.8	89.5
U	78.4	103.4	88.9	110.7	98.4

OBJECTIVE-TYPE QUESTIONS

(c) 21.22

16. **Approximately**, what is the ratio between total production of Companies P, Q and R in 2000 and the total production of Companies S, T and U in that year respectively?

 (a) 17:19
 (b) 18:19
 (c) 13:15

 (d) 13:17
 (e) 16:21

17. What was the average production (in lakhs) of all the Companies in year 1999?

- (a) 89.25 (b) 70.75 (c) 84.42
- (*d*) 76.50 (*e*) None of these

18. Production of Company S in 1999 is what per cent of the total production of the Company for all the given years? (rounded off to two digits after decimal)

- (a) 19.27 (b) 19.36
- (*d*) 23.19 (*e*) None of these

19. **Approximately** what was the percentage increase in production of Company R from 1999 to 2000?

(a) 22 (b) 38 (c) 35 (d) 25 (e) 30

20. Total production of Company S for all the given years is what per cent of the total production of Company Q for all the given years? (rounded off to the nearest integer)

(a) 72 (b) 68 (c) 69 (d) 67 (e) None of these

Qs. 21-25. In each of these questions, a question is followed by information in three statements. You have to study the questions alongwith the information given in the statements and decide the information in which of the statement(s) is necessary and sufficient to answer the question.

21. What is the overall percentage of marks obtained by Sudha in all five subjects?

- I. Sudha scored 75% marks in Maths & Science together.
- II. Her aggregate marks in History and Science are 72%.
- III. She has scored 85% marks in Sanskrit.
- (a) All I, II & III
- (b) I & either II or III
- (c) III and either I or II
- (d) Any two of the three
- (e) Question cannot be answered even with the information in all three statements
- 22. What is the speed of the train in kmph?
 - I. Length of the train is 240 metres.
 - II. The train crosses a 320 metres long platform in 24 seconds.
- III. Crosses another stationary train in 18 seconds
- (a) II & III only
- (b) I & either II or III
- (*c*) I & II only
- (d) II & either I or III
- (e) None of these
- 23. What is the area of the rectangular field?
 - I. Perimeter of the field is 98 metres.
 - II. Length of the diagonal is 35 metres.
- III. Sides of the rectangle are in the ratio of 3 : 4.
- (a) All I, II & III
- (*b*) Any two of the three
- (c) I & III only
- (d) I & II only

- (e) None of these
- 24. What is Neeta's present age?
 - I. Ratio between present ages of Neeta and Geeta is 3 : 4 respectively.
 - II. Seven years hence the respective ratio of their ages will be 4 : 5.
 - III. Seven years ago Neeta's age was two-third of Geeta's age that time.
- (*a*) I & II only
- (b) I & III only
- (c) II & III only
- (d) Any two of the three
- (e) All I, II & III
- 25. How many boys are there in the class?
 - I. Boys and girls are in the ratio of 5 : 7 respectively.
 - II. Number of girls is more than the number of boys by 12.
 - III. Number of girls is 140% of the number of boys.
- (*a*) II & either I or III
- (b) I & III only
- (c) II & III only
- (*d*) I & II only
- (e) None of these

Qs. 26-30. Study the following graphs carefully to answer these questions:



26. What is the ratio between male population of States A and B together and the female population of these two States together respectively?

- (a) 704: 507
 (b) 507: 704
 (c) 352: 507
 (d) 507: 352
 (e) None of these
 27. What is the ratio between female population of State 'G' and the male population of State 'E' respectively?
 (a) 39: 40
 (b) 40: 39
 (c) 17: 18
 (d) 19: 20
 (e) None of these
 - 28. What is the total population of State 'F' (in lakhs)?
 - (a) 11.14 (b) 8.58
 - (c) 6.52 (d) 14.11
 - (e) None of these

29. Female population of State C is what per cent of the total population of that State? (rounded off to the nearest integer) (a) 48 (b) 56 (c) 62 (*d*) 59 (e) None of these

30. Approximately what is the average population of the given States (in lakhs)?

- (a) 6.5 (c) 4.6 (b) 8
- (*d*) 5.6 (e) 10

31. What approximate value will come in place of the question mark (?) in the following equation?

 $(15.01)^2 + \sqrt{81.009} \times 32 = ?$

- (a) 498 (b) 369 (c) 611
- (d) 288 (e) 513

32. Which of the following values of 'x' will satisfy the inequality $x^2 + 12 > 7 \times ?$

- (a) x > 4 or x < 3(b) -4 < x < 4
- (c) -4 < x < 3(d) -3 < x < 3

(e) None of these

33. The number obtained by interchanging the digits of a two digit number is more than the original number by 45. If the digit in the unit's place of the original number is more than the digit in ten's place by 5, what is the original number?

(a) 83 (b) 49 (c) 38

(d) Cannot be determined (e) None of these

34. Three-fourth of a number is equal to 60% of another number, and the difference between the two numbers is 20. What is the sum of the two numbers?

(c) 170 (a) 220 (b) 180

(e) None of these (*d*) Cannot be determined

35. Which of the following has the fractions in descending order?

- (a) $\frac{7}{8}, \frac{5}{6}, \frac{9}{11}, \frac{11}{13}$ (b) $\frac{5}{6}, \frac{7}{8}, \frac{11}{13}, \frac{9}{11}$ (c) $\frac{5}{6}, \frac{7}{8}, \frac{9}{11}, \frac{11}{13}$ (d) $\frac{7}{8}$, $\frac{11}{13}$, $\frac{5}{6}$, $\frac{9}{11}$
- (e) None of these

36. Abhijit borrowed Rs 15,000 from Nisha at compound interest rate of 12 p.c.p.a. How much money should Abhijit pay at the end of 2 years to settle the loan?

(a) Rs 18,600 (b) Rs 18,816	(c)	Rs 18,618
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(d) Rs 18,869 (e) None of these

37. Capacity of a cylindrical vessel is 25.872 litres. If the height of the cylinder is three times the radius of its base, what is the area of the base in square cms?

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((a)	336	(b)	1232	(c)	616

(*d*) Cannot be determined

(e) None of these

38. Mr Ramesh spends 25% of his monthly salary on household expenditure, 20% of the remaining on children's education, and the remaining is equally invested in three different schemes. If the amount invested in each scheme is Rs 5,600, what was the monthly salary of Mr Ramesh?

(a) Rs 28,000 (b) Rs 21,000

(c) Rs 24,000

(d) Cannot be determined

(e) None of these

39. If $\frac{68}{v} = \frac{y}{17}$ then what is the value of y?

(b) 17 (c) 34 (*e*) None of these (a) 38 (d) 19 40. What approximate value will come in place of the question mark (?) in the following equation?

84.95% of 280 + $\sqrt{2}$ = 253.001

(a) 256 (b) 324 (c) 18 (d) 15 (e) 225

Qs. 41-45. Study the following table to answer these questions:

Percentage of marks obtained by five students in five different subjects

Subject	Philosophy	Psychology	Sociology	History	Maths
Students	(75)	(80)	(60)	(60)	(125)
А	48	75	65	73	79
В	62	69	77	55	66
С	78	58	61	46	85
D	56	72	82	63	78
Е	66	85	74	71	89

Note: Maximum marks are given into bracket for each subject.

41. What are the average marks of all students out of 80 in Psychology?

- (a) 58.24 (b) 71.80 (c) 57.44
- (d) 72.10 (e) None of these

42. What is the average percentage of marks obtained by all students in History?

(a) 36.96

(b) 62.60 (c) 46.26 (d) 63.10 (e) None of these

43. What is the ratio between the marks obtained by A in Philosophy and Maths together, and the marks obtained by him in the other three subjects together respectively?

(b) 385 : 408 (a) 408 : 385 (c) 19:20

(*d*) 20 : 19 (e) None of these

44. What are total marks obtained by E in all subjects together?

(a) 325 (b) 385.15 (c) 385

(d) 315.75 (e) None of these

45. What is the overall percentage of marks obtained by C in all subjects? (rounded off to nearest integer)

- (a) 69 (*b*) 68 (c) 66
- (d) 67 (e) None of these

46-50. Study the following graph carefully to answer these questions:

Number of students studying Arts and Commerce in an institute over the years



46. During which of the following years was the percentage increase/decrease in number of students studying Arts from the previous year was the minimum?

- (a) 1998 (b) 1999 (c) 2000
- (d) 2001 (e) 2002

47. If the number of students studying Commerce in year 2000 was increased by 20% and the number of students studying Arts in the same year was decreased by 10%, what would have been the total number of students studying Arts and Commerce in 2000?

(c) 1385 (b) 1375 (a) 1285

(d) 1275 (e) None of these

48. Approximately what was the percentage increaase in number of students studying Arts and Commerce together from 1997 to 2002?

(a) 115 (*b*) 55 (c) 75 (d) 125 (e) 110

49. What was the average number of students studying Commerce for the given years?

(a) 675 (b) 667 (c) 716 (e) None of these (d) 765

50. What is the ratio between the total number of students studying Arts and Commerce together in 1999 and in 2001 respectively?

(a) 8:9	(<i>b</i>) 15 : 19	(c) 11 : 15
(<i>d</i>) 7:10	(e) None of these	

ANSWERS AND EXPLANATIONS

1. (d) Let M.P. = Rs 100, d = 15%

$$\therefore$$
 SP = Rs 85
Profit = $\frac{40}{3}$ %
 \therefore CP = $\frac{340 \times 100}{100 + \frac{40}{3}}$ = Rs 300
If S.P. is Rs 85 then M.P. = Rs 100
If S.P. is Rs 340 then M.P. = $\frac{100 \times 340}{85}$
M.P. = Rs 400
If no discount, then S.P. = M.P. = Rs 400
 \therefore P = 400 - 300 = Rs 100
P% = $\frac{100}{300} \times 100 = 33\frac{1}{3}$
2. (e) 3 persons are to be selected, at least one woman
 $1W + 2M$, $2W + 1M$, $3W$
 \therefore Reqd. no. of ways = ${}^{4}C_{1} \times {}^{3}C_{2} + {}^{4}C_{2} \times {}^{3}C_{1} + {}^{4}C_{3}$
 $= 12 + 18 + 4 = 34$
3. (c) $x^{2} = 5x + 14 \Rightarrow x^{2} - 5x - 14 = 0 \Rightarrow x = 7$
(rejecting -ve value)
4. (e) Let the speed of boat in still water be x km/hr and that
of stream be y km/hr $S = \frac{D}{T}$

Downstream speed = x + y =
$$\frac{30}{2\frac{1}{2}}$$
 = 12 (*i*)

Upstream speed = x - y =
$$\frac{30}{3\frac{3}{4}}$$
 = 8 (*ii*)

Solving (i) and (ii), we get x = 10 km/hr

5. (b) Three vowels A, I, E and 5 constants : Vowels should come together Consider (A, I, E) as one letter \therefore 6 letters can be arranged in 6! ways. Three vowels among themselves can be arranged in 3! wavs

$$\therefore$$
 Reqd. no. of ways = 6! × 3! = 4320

6. (d) Let the sets of students who play cricket, badminton and football be C, B and F respectively

$$\therefore n B \cap C \cap F = 50 \times \frac{6}{100} = 3$$

No. of students who play only cricket and badminton

$$=50 \times \frac{20}{100} = 10$$

No. of students who play cricket and flootball only $=50 \times \frac{12}{100} = 6$

. No. of students who play cricket

= No. of students who play cricket only

$$= 3 + 10 + 6 = 50 \times \frac{26}{100} + 19 = 32$$

=

7. (b) No. of students who play football

$$50 \times \frac{10}{100} + 6 + 50 \times \frac{8}{100} + 3 = 18$$

8. (a) No. of students who play both badminton and football $=50 \times \frac{8}{100} + 3 = 7$

9. (c)
$$7 \times 30 + x = 300 \implies x = 90$$

10. (e)

11. (c) $4 \times 1 + 1^2 = 5$, $5 \times 2 + 2^2 = 14$, $14 \times 3 + 3^2 = 51$, $51 \times 4 + 4^2 = 220$ and so on \therefore 6 is wrong. It should be 5.

 $4 + 3 = 7, 7 + 3^2 = 16, 16 + 3^3 = 43, 43 + 3^4 = 124,$ $124 + 3^5 = 367, 367 + 3^6 = 1096$ 46 is wrong. It should be 43.

 ${}^{4}C_{2}$

OBJECTIVE-TYPE QUESTIONS

14. (d) 19, 28, 39, 51, 67, 84, 103

$$4^2 + 3 = 19, 5^2 + 3 = 28, 6^2 + 3 = 39, 7^2 + 3 = 52,$$

 $8^2 + 3 = 67, 9^2 + 3 = 84, 10^2 + 3 = 103$
51 is wrong. It should be 52.
15. (a) $4 \times \frac{1}{2} = 2, 2 \times \frac{3}{2} = 3, 3 \times \frac{5}{2} = 7.5, 7.5 \times \frac{7}{2} = 26.25$
 $26.25 \times \frac{9}{2} = 118.125, 118.125 \times \frac{11}{2} = 649.6875$
 $\therefore 118.725$ is wrong. It should be 118.125
16. (c)
17. (b)
18. (a) $\frac{78.6}{407.9} \times 100 = 19.27$
19. (c)
20. (c)
21. (a)
22. (c) $S = \frac{240 + 320}{24} \times \frac{18}{5}$
23. (b) Let the sides be 3x and 4x
 $\therefore 2(3x + 4x) = 98 \Rightarrow x = 7$
 $\therefore Area = 3x \times 4x = 12x^2 = 12 \times 7^2 = 568 \text{ m}^2$
or $(3x)^2 + (4x)^2 = 35^2$
By finding x, we can find area
 $2(L + B) = 98$
 $\therefore 2(L + x) = 98 \Rightarrow L = 49 - x$
 $L^2 + B^2 = 35^2 \Rightarrow (49 - x)^2 + x^2 = 35$
By finding x, we can find L and B and then area
24. (d)
26. (d) $\frac{11+15}{100} \times 32 \text{ lakhs} = \frac{507}{352}$
27. (e) Reqd. ratio $= \frac{15}{100} \times 32 \text{ lakhs} = \frac{80}{117}$
28. (a) $\frac{122}{100} \times 39 + \frac{8}{100} \times 32 \text{ lakhs} = 11.14 \text{ lakhs}$
29. (c) $\frac{16}{100} \times 32 + \frac{8}{100} \times 39$
(rounded off to nearest integer)
30. (e) $\frac{39+32}{7} = 10 \text{ lakhs (approximately)}$
31. (e) $15^2 + \sqrt{81} \times 32 = 225 + 9 \times 32 = 513$
32. (a) $x^2 - 7x + 12 > 0 \Rightarrow (x - 4) (x - 3) > 0$

 \Rightarrow x<3 or x > 4

33. (d) Let the digit at unit's place be x and ten's place be y

$$\therefore$$
 No. = 10y + x, x - y = 5 ...(i)
10x + y - (10y + x) = 45 \Rightarrow x - y = 5 ...(ii)
Both equations are same
 \therefore We can't find the values of x and y exactly
83, 49, 38 all satisfy both the conditions
34. (b) $\frac{3}{4} x = \frac{60}{100} y \Rightarrow 5x - 4y = 0$
 \therefore y > x \therefore y - x = 20
Solving both equations, we get x = 80, y = 100
 \therefore Sum = 180
35. (d) Change into decimals
36. (b) A = P $\frac{1}{11} + \frac{R}{100} \int_{1}^{n} = 15000 \int_{1}^{11} + \frac{12}{100} \int_{1}^{2} = \text{Rs } 18816$
37. (c) Let r = x
 \therefore Height = 3x V = πr^2h
Vol. of a cylinder = 25.8721 = 25872 cm³ (1l = 1000 cm³)
 $\frac{22}{7}r^2 \times 3r = 25872 \Rightarrow r = 14 \text{ cm}$
Base area = $\pi r^2 = \frac{22}{7} \times 14^2 = 616 \text{ cm}^2$
38. (a) Let total salary be Rs x
Expenditure on (household) = $\frac{25}{100}x$
A.T.S. $\frac{75}{100} x - \frac{20}{100} \times \frac{75}{100} x = 3 \times 5600$
 $\Rightarrow x = 28,000$
39. (c) $y^2 = 68 \times 17 \Rightarrow y = 34$
40. (d) $\frac{85}{100} \times 280 + x = 253 \Rightarrow x = 15$
41. (c)
42. (e)
43. (b) $\frac{\frac{48}{100} \times 75 + \frac{79}{100} \times 125}{100} \times 125} = \frac{385}{408}$
44. (d)
45. (d)
46. (e)
47. (d) $550 \times \frac{90}{100} + 650 \times \frac{120}{100} = 1275$
48. (d)
49. (a)
50. (e)